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The spread of the Rose-ringed Parakeet, *Psittacula krameri*, in Turkey between 1975 and 2015 (Aves: Psittacidae)

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The Rose-ringed Parakeet (*Psittacula krameri*) was recorded in Turkey for the first time in 1975 and has since then established breeding populations in at least six cities as a consequence of intentional and accidental introductions. Parakeet sightings have been recorded in and around urban areas and records are available from 26 provinces. It is most abundant in İstanbul, followed by İzmir, Ankara, Yalova, Antalya, and Şanlıurfa. The distribution and population size has increased continuously especially since the mid-2000s. The population is estimated to be now over 1,355 individuals in the country, which is still moderate compared to some other West European countries.

Keywords: Rose-ringed Parakeet; distribution; population; urban area; Turkey

Introduction

The Rose-ringed Parakeet (*Psittacula krameri*) is native to two large, geographically distinct regions (Sub-Saharan Africa and South Asia, mostly the Indian subcontinent), but has been introduced into many parts of the world with populations established on five continents (Forshaw, 2010). Populations are found in over 35 countries outside its native range (Butler 2003; GISD, 2015). It feeds mainly upon seeds, fruits, flowers, and nectar (Forshaw, 2010) and is found in both moist and dry, deciduous, lightly-wooded habitats including light secondary forests, gardens, orchards and cultivated areas of human habitats (Snow & Perrins, 1998). The species is listed in the Global Invasive Species Database (GISD, 2015) and is included in the 100 worst invaders list in Europe (DAISIE, 2009 & 2016). Both in its native range and in introduced areas, the Rose-ringed Parakeet is considered to be one of the most significant agricultural pests (Del Hoyo, Elliott & Sargatal, 1997; Butler, 2003; Fletcher & Askew, 2007), and is known to be able to aggressively outcompete native species in some invaded areas (Strubbe & Matthysen, 2009; Battisti & Dodaro, 2016; Hernández-Brito, Luna, Carrete, & Tella, 2014).

In Europe it is found in twelve countries, from Belgium and the United Kingdom in the west across north-central Europe to Greece, Slovenia and Turkey. Its population size is increasing and its distribution is expanding in several countries (Brochier, Vangeluwe, & Van Den Berg, 2010). Europe's total population has been estimated as >85,000 individuals with 1,040 of them in Turkey (Pârâu et al., 2016). The population is also increasing in some Middle East countries such as Oman (e.g. Eason, Victor, Eriksen, & Kwarteng, 2009). In Turkey, the species has been intentionally or accidentally introduced in a number of locations. The first records of this species in Turkey are from 1975/1976 in Ankara (Kasperek & Bilgin, 1996; Boyla, Aydemir & Eken, 1998). Records followed subsequently from Mersin and İstanbul; some of them were believed to

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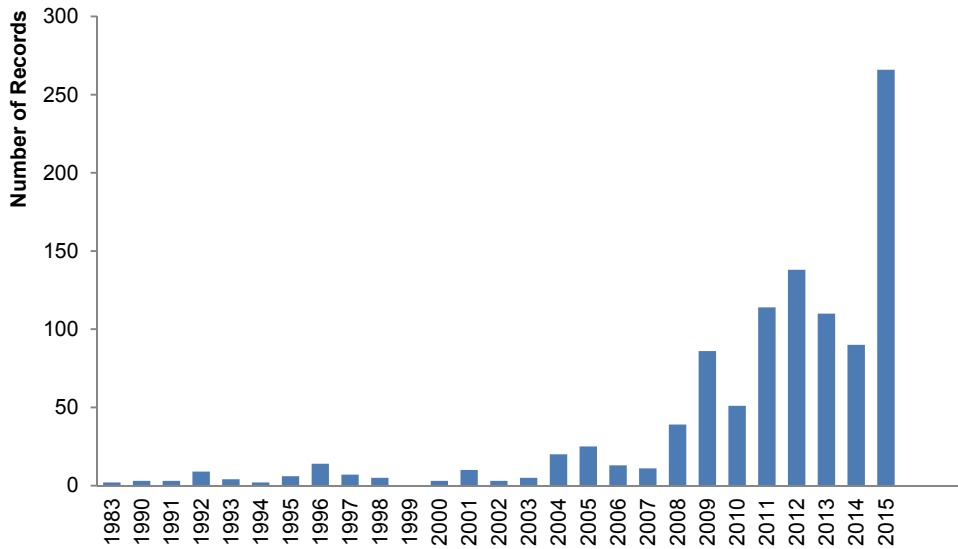


Figure 1. Number of Rose-ringed Parakeet records in Turkey between 1983 and 2015.

be escaped individuals (Kasperek, 1992; Kasperek & Bilgin 1996; Boyla, Aydemir & Eken, 1998). Since the early 1990s, sightings have considerably increased.

While there are many records and photographs available from Turkey, the Rose-ringed parakeet's distribution and status has not been reviewed since Boyla et al. (1998). I have established a database to collate all records from the country and have analysed the spread of the species in the last 40 years.

Methods

Historical data were gathered from scientific and popular articles, bird reports, grey literature and observation databases up to the year 2015 including KuşBank (2015) and Trakuş (2015). Existing data include anecdotal reports, records of observation, bird reports, fieldwork reports, databases, photos, and publications. Mapping of the geographic distribution was performed with the geographic information system DIVA-GIS ver. 7.5 (www.diva-gis.org).

Results and Discussion

All Rose-ringed Parakeet sightings were recorded in and around urban areas and both the number of records and the number of observed birds have increased over the period studied. There has been a remarkable peak in the number of observations in 2012 and 2015 (Figure 1). 1% of all observations are from the period 1975–1990, 22% from 1991–2006 and 77% from 2007–2015. Both the average and the maximum number of individuals per record have increased. The Rose-ringed Parakeet was recorded at altitudes between 0 and 1200 m, with most observations close to sea level (5–120 m). The preferred habitats are parks, wooded urban areas and coastal towns.

Since its first appearance in Turkey in 1975, this species has established breeding populations as a consequence of intentional releases and accidental escapes. Especially since the early 1990s, permanent populations have become established in and around

Table 1. Comparison of Rose-ringed Parakeet sightings in the period 1975–1997 (according to Boyla et al., 1998) and 1999–2015 (this study). The maximum number gives the highest number of individuals recorded together in the given period. Conf. = breeding confirmed.

Province	First record	1975–1998			1999–2015		
		No. of locations	Max. number	Breeding	No. of locations	Max. number	Breeding
Adana	1996	1	11	-	5	3	?
Ankara	1975	9	35	-	45	25	Conf.
Antalya	1997	1	1	-	3	10	Conf.
Balıkesir	1997	3	4	-	-	-	No
Bolu	2014	-	-	-	1	1	No
Burdur	1995	1	1	-	-	-	No
Bursa	2008	-	-	-	2	1	?
Çanakkale	2015	-	-	-	1	1	No
Denizli	2005	-	-	-	4	1	?
Gaziantep	1995	1	1	-	2	1	?
Giresun	1999	-	-	-	1	1	No
Hatay	1999	-	-	-	2	6	?
İstanbul	1983	14	450	Probably	87	424	Conf.
İzmir	1992	10	250	Conf.	15	30	Conf.
Kastamonu	2009	-	-	-	1	1	No
Kırşehir	1996	2	2	-	-	-	No
Kocaeli	2006	-	-	-	1	1	No
Mersin	1990	1	1	-	2	1	No
Muğla	1994	2	2	-	2	1	?
Osmaniye	2012	-	-	-	1	1	No
Sakarya	1998	1	5	-	2	1	No
Samsun	1993	1	1	-	1	1	No
Sinop	1999	-	-	-	1	10	No
Şanlıurfa	1994	2	1	-	3	10	Conf.
Tekirdağ	1999	-	-	-	1	1	No
Yalova	1994	-	-	-	3	100	Conf.
TOTAL		50			186		

urban areas of the coastal towns of İstanbul and İzmir, and in Ankara in Central Anatolia. In the meantime, breeding has also been recorded in Antalya, Şanlıurfa, and Yalova, and is assumed in a number of other provinces. Among them, the highest number of parakeets was recorded in İstanbul (Figure 2). Breeding was confirmed for the first time in İstanbul in 1990, in İzmir in 1995, in Ankara in 1997, in Antalya in 2006, in Yalova in 2007, and in Şanlıurfa in 2009. Populations may exist in a number of other provinces, but its status there needs confirmation. These include Adana, Bursa, Denizli, Gaziantep,



Figure 2. Maximum number of Rose-ringed Parakeets recorded in Turkish provinces between 1975 and 2015.

and Hatay. Records without evidence for breeding are available from many other provinces (Table 1). New records (including those without evidence for breeding) are also coming from a number of inland provinces (Figure 3). In total, the Rose-ringed Parakeet has been recorded in 26 provinces. High numbers of birds are usually being reported in winter when they are gregarious and form winter roosts (Boyla et al., 1998).

İstanbul, Ankara, İzmir, and Antalya together hold a total of 1,040 parakeets within their urban parks. Boyla et al. (1998) were able to compile information from 50 locations in 14 provinces of Turkey, while this study has collected information from 186 locations in 26 provinces (Table 1). However, data on the size of the breeding population are limited. In İstanbul a total of between 100 and 450 individuals were counted in the breeding season in public parks, gardens, and groves between 1992 and 2014. These include 37 individuals counted in the breeding season in Çamlıca Grove (Şahin, 2012), 30 pairs each breeding in Gülhane Park and Yeşilköy, 20 pairs each in Fatih and Zeytinburnu, 15 pairs each in Çamlıca Hill and Florya Atatürk Forest, five pairs each in Validebağ Grove, Beykoz, Eyüp and Yıldız Grove, and two pairs each in Emirgan Grove, Arampaşa Grove, İstanbul Technical University Maçka Campus, Boğaziçi University Campus, İstanbul University Beyazıt Campus, Beyoğlu, Avcılar, Şişli, Küçükçekmece and Arnavutköy in İstanbul. In İzmir, six pairs breed in Ege University Bornova Campus, three pairs in Kültürpark, and two pairs bred in 2013 in Buca. In Antalya, four pairs breed in Karaalioğlu Parkı, and in Ankara, two pairs each breed at Atatürk Orman Çiftliği Campus, Altınpark and Anıtkabir, and one pair at Eymir Lake in 1997 and 2007 (Kirwan et al., 2008; unpubl. data). According to data in KuşBank (2015), three pairs breed in Şanlıurfa city centre and one pair bred in Yalova city centre in 2007.

Pârâu et al. (2016) estimated the population of the Rose-ringed Parakeet as 760 individuals in İstanbul and 280 individuals in other provinces. The population is now estimated to be over 1,000 individuals in İstanbul and over 355 individuals in other provinces (İzmir: 150, Ankara: 60, Antalya: 20, Şanlıurfa: 10, Yalova: 100, other provinces: 15). These numbers are moderate compared to the populations in some West European countries.

The Oriental plane tree (*Platanus orientalis*), London plane tree (*Platanus × acerifolia*) and Date palm (*Phoenix dactylifera*) are the preferred nesting trees. Nesting on buildings has not yet been recorded in Turkey, although these are preferred breeding

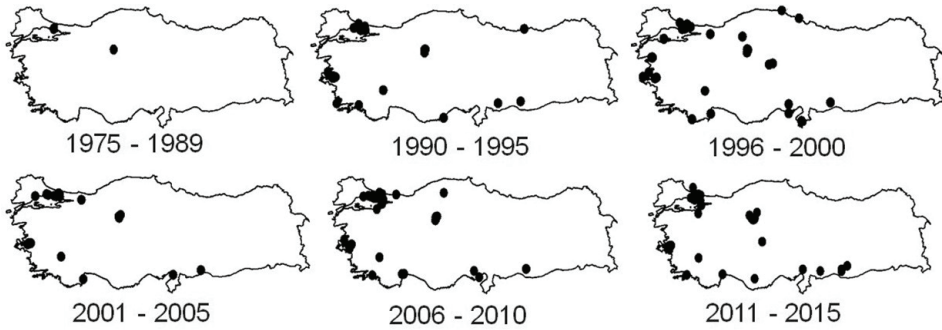


Figure 3. Distribution of records of the Rose-ringed Parakeet in Turkey in different periods.

sites in West European cities (Braun, 2007). The Rose-ringed Parakeet has shown defensive / attack interactions with the Hooded Crow (*Corvus cornix*), the Jackdaw (*Coloeus monedula*), the Caucasian Squirrel (*Sciurus anomalus*), and the Yellow-legged Gull (*Larus michahellis*).

Rose-ringed Parakeets have been heavily traded as cage birds since the late 1960s and many have escaped from aviaries. Population expansion has subsequently occurred in human-dominated habitats (DAISIE, 2009). There is a report that 180 Rose-ringed Parakeets escaped in December 1997 from the cargo department of İstanbul Airport (www.hurriyet.com.tr/gundem/firari-papaganlar-39277392). Boyla et al. (1998) mention reports that the species has been continuously released into the wild in İzmir-Bornova by local people since the middle of the 20th century. The species was only a rare cage bird before 1990, but the number of imported birds has clearly increased in Turkey since the early 1990s according to data provided by CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) (<https://trade.cites.org>). According to the CITES database, for example, 700 individuals were imported into Turkey in 2011, 800 (in batches of 500 and 300) in 2010, 500 in 1999, and 250 in 2008. Although these figures are certainly far from being complete, they show that Rose-ringed Parakeets are heavily traded cage birds in Turkey and this has obviously provided a greater opportunity for accidental escapes, which may explain the increase in sightings. Their range and population size are likely to increase in the future, as the species continues to be sold as a cage bird in pet shops in Turkey.

The Department of Hunting and Wildlife Service of the Ministry of Forestry and Water Affairs is responsible for the legal regulation of the wildlife trade. Rose-ringed Parakeets are still illegally imported to Turkey, and it is also known that the species is illegally collected from the wild to be sold as a pet in Ankara, İzmir, and İstanbul. The ministry attempts to prevent these illegal transactions. It is likely that parakeets are sometimes released into the wild by vendors, in order to avoid prosecution. In particular, a group of some 450 parakeets seen in İstanbul in 1992 is thought to have been released from captivity for this reason. These birds were not seen again in that area. Also in İzmir, groups of approximately 250 individuals were seen in 1995 but in the following years such big flocks were not seen there again (Figure 4). This is clear evidence that not all released birds succeed in establishing permanent populations.

The Turkish bird watching community has experienced rapid growth from only about 20 people in 1990 to about 1,000 in 2006 (Özesmi & Per, 2006), and in the last

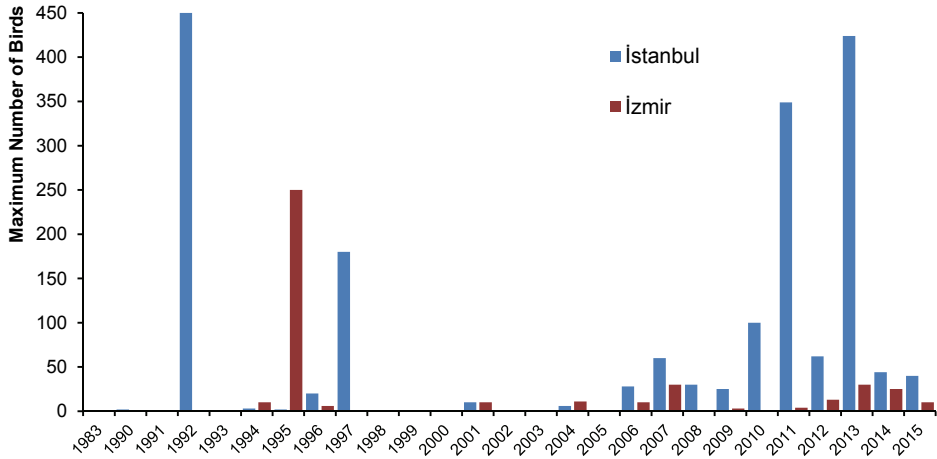


Figure 4. Maximum Number of Rose-ringed Parakeets recorded in İstanbul and İzmir between 1983 and 2015.

ten years the number of birdwatchers and bird photographers has reached around 3,500 individuals, based on records by KuşBank (Internet Based Birdwatching Database and Citizen Science Project) and Trakuş web pages. Undoubtedly, this situation has made an important contribution to the increase in the number of the Rose-ringed Parakeet observations in the country.

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Disclosure Statement

No potential conflict of interest was reported by the author.

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